## Amendments to the Claims

*Please amend the claims as follows:*

1. (Currently amended) A nucleic acid comprising a sequence coding for a fusion protein, the sequence comprising:

—F—$As_m$—$R_n$—Y—

where

F comprises a nucleic acid sequence encoding [[a]] hirudin ~~derivative~~,

As is a nucleic acid sequence comprising a codon,

m is an integer from 0-10,

R is an arginine codon,

n is 0 or 1, and

Y is a nucleic acid sequence coding for ~~a protein of interest~~ proinsulin or insulin.

2. (Currently amended) The nucleic acid of claim 1, wherein the nucleic acid comprises:

~~P—S—F—$As_m$—$R_n$—Y~~

P—S—F—$As_m$—$R_n$—Y—T

where

P is a promoter,

S is a nucleic acid sequence coding for a signal sequence which increases yield,

T is an untranslated expression enhancing DNA sequence, and

wherein F, $As_m$, $R_n$, and Y are as defined in claim 1.

3. (Currently amended) The nucleic acid of claim 2, wherein S is the signal sequence of the oprF gene from *Pseudomonas fluorescens*, the nucleic acid encoding the signal sequence of *Salmonella typhimurium* outer membrane protein (fim D), the nucleic acid sequence encoding the signal sequence of the *Escherichia coli* alkaline phosphatase precursor protein, the nucleic acid sequence encoding the signal sequence smompa derived from the ompA gene for major outer membrane protein of *Serratia marcescens*, the nucleic acid sequence encoding the signal sequence ecoompc derived from *Escherichia coli* ompC gene coding for major outer membrane protein, the nucleic acid sequence encoding the signal sequence af009352 derived from *Bacillus subtilis* osmoprotectant binding protein precursor (opuCC), the nucleic acid sequence encoding the signal



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sequence aeoxyna derived from *Aeromonas caviae* xynA gene for xylanase I precursor, or the nucleic acid sequence encoding the signal sequence stomps1 derived from *Salmonella typhi* gene for outer membrane protein S1.

4. (Previously Presented) The nucleic acid of claim 2, wherein the nucleic acid sequence F encodes for lepirudin, Val-Val-hirudin, Ile-Thr-hirudin, Ser-hirudin or Ala-hirudin.

5. (Currently amended) The nucleic acid of claim [[2]] 4, wherein the ~~protein of interest comprises proinsulin, insulin, or derivative thereof~~ nucleic acid sequence F encodes for lepirudin or a hirudin that carries serine or alanine instead of leucine at position 1 of the amino acid sequence.

6-8. (Canceled)

9. (Original) A plasmid comprising the nucleic acid of claim 1.

10. (Original) A host cell comprising the plasmid of claim 9.

11. (Original) A host cell comprising the nucleic acid of claim 1.

12. (Original) The host cell of claim 10, wherein the host cell is selected from *Escherichia coli*, *Bacillus subtilis*, and *Streptomyces lividans*.

13. (Original) The host cell of claim 11, wherein the host cell is selected from *Escherichia coli*, *Bacillus subtilis*, and *Streptomyces lividans*, and wherein the nucleic acid is optionally integrated in the genome of the host cell.

14. (Currently Amended) A process for fermentative production of a fusion protein, comprising: fermenting the host cell of claim 11 in a fermentation medium ~~resulting in a fermentation supernatant~~ and isolating from the fermentation medium the fusion protein produced by the host cell of claim 11~~thereby~~.



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15. (Canceled)

16. (Currently Amended) The process of claim 14, wherein isolating the fusion protein comprises precipitating the fusion protein from the fermentation mediumsupernatant and concentrating the fusion protein by at least one of microfiltration, hydrophobic interaction chromatography, and ion exchange chromatography.

17. (Currently amended) The process of claim 14, wherein isolating the fusion protein comprises precipitating components of a culture the fermentation medium or the supernatant, while the fusion protein remains in solution.

18. (Currently amended) The process of claim 14, wherein after the fermentation, mercaptan or cysteine hydrochloride is added to the fermentation mediumsupernatant at pH about 6 to 9, resulting in a free SH group concentration of about 0.05 to 2.5 mM.

19. (Currently amended) The process of claim 14, wherein: isolating the fusion protein comprises separating the fermentation mediumsupernatant from the host cell, and after separating the fermentation supernatant from the host cell, the host cell is fermenting the host cell repeatedly cultured in fresh fermentation medium to form additional supernatant from each culture, and isolating the fusion protein is isolated from each fermentation mediumadditional supernatant.

20. (Currently amended) The process of claim 14, wherein: mercaptan or cysteine hydrochloride is added to the mediumsupernatant at pH about 6 to 9, so that the supernatant has a free SH group concentration of about 0.05 to 2.5 mM.

21. (Currently Amended) A process for the production of insulin or insulin derivative, comprising:

obtaining fusion protein by fermenting a host cell comprising the nucleic acid of claim 5 in a fermentation medium and isolating the fusion protein produced by the host cell thereby,

releasing insulin or insulin derivative from the fusion protein by enzymatic or chemical cleavage; and

isolating the insulin or insulin derivative.



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22. (Canceled)

23. (Original) The process of claim 14, wherein the host cell comprises a bacterium.

24-25. (Canceled)



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